**Monthly Progress Report**
**Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)**
**October 2001**

This report summarizes Los Alamos National Laboratory (LANL) activities completed during October of fiscal year (FY) 2001 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918)], which was submitted to the New Mexico Environment Department-Hazardous Waste Bureau [NMED-HWB] on 9/30/98, and approved by NMED-HWB on 9/8/99), and other related activities are described herein.

**Description of Activities and Contacts**

***High Performing Team (HPT) Activities –*** The 260 HPT meeting was held on October 9, 2001. The discussion included 1) an update on ongoing TA-16-260 CMS activities; and 2) an update on the ecorisk activities. Other agenda items were deferred to a future meeting due to an illness on the part of one of the HWB representatives

The status of the CdV-R-37-2 well, the Interim Measure, and the CMS sampling were updated (see detailed discussion in the September CMS Progress Report and below).

In the ecorisk update, LANL noted that the recent trapping events had caught deer mice, brush mice and wood rats. This is an increase in species relative to the spring trapping. The preliminary data for contaminant body burden from the spring trapping indicates slightly higher levels of barium in the rodents captured in Canon de Valle compared to those captured in Pajarito Canyon. LANL noted that the aquatic ecotoxicity sample had been collected and shipped to Pacific ecorisk. HWB stated that Dr. Jacobi would soon (January 2002) be working on identifying macro invertebrates caught in FY 01 and that the samples from Canon de Valle would be his highest priority. The mechanisms for archiving reference collections of aquatic invertebrates were discussed. LANL would need to provide verification for this collection. This issue was not resolved and will be discussed further by the HPT.

The next HPT meeting was scheduled for Monday December 10, 2001. Agenda items may include ecorisk results, a data update and a discussion of the RFI and CMS Reports.

***RCRA Facility Investigation (RFI) Report and CMS Plan***– No new activities occurred during this reporting period.

***Best Management Practices (BMPs)***– BMPs are inspected quarterly and following significant precipitation events. Due to recent rains at TA-16-260, BMP repairs were required including replacement of plastic sheeting and sand cover over the HE troughs. These were completed in early October.

***CMS Hydrogeologic Investigations–***CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling program includes collecting samples at Martin and Burning Ground spring every other day for stable isotopes. A stream profile and flow integrated sampling were completed.

Geophysical studies in Canon de Valle were continued. High resolution resistivity studies were initiated. These studies suggest that water in the Burning Ground spring area is infiltrating into the tuff for several tens of feet east of the spring.

The wells, both alluvial and deep, were checked for both presence and level of water. Four out of five alluvial wells in Canon de Valle contained water, the uppermost well was dry. Shallow piezometers were deepened near Burning Ground spring, downgradient from MDA-P, and near the Tshirege unit 2/3 contact. At all locations water has not yet been observed due to the low level of water in the alluvial system. No water was present in all three alluvial wells in Martin Spring Canyon. All of the intermediate depth boreholes were dry.

No samples from precipitation events were collected and archived for analysis during this reporting period.

For well CdV-R-37-2, the Westbay installation was completed. Waste management activities, such as disposal of development water and cuttings, were completed. Site restoration activities were initiated.

***Ecological Risk Pilot***–

Small mammal trapping in Canon de Valle and Pajarito Canyon was completed. Deer mice, brush mice and wood rats were captured. Rates of capture were higher than they were during the spring. Samples are currently being screened for Hantavirus.

***CMS Bench and Pilot Studies***–Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Studies include:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). The LANL portion of this study has been completed.
3. At Pantex, a study of in situ anaerobic bioremediation of HE using gas-phase carbon additions.
4. A study of ex situ anaerobic bioremediation of HE-contaminated soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment. The LANL portion of this study has been completed.

5. A study of HE composting. Amendments appropriate to northern New Mexico were tested on both clean and contaminated soils. The LANL portion of this study has been completed.
6. A study of immobilization of barium-contaminated sediments from Cañon de Valle. A preliminary study has been completed and further investigations are planned for FY 02.
7. Phytoremediation studies in Cañon de Valle. Native plants are being evaluated for their ability to remove HE from surface waters. Preliminary results suggest that low levels of phytoremediation are occurring in the Burning Ground spring area.
8. Oxidation, reduction, and in-situ bioremediation studies of groundwater contamination at Pantex.

Initial analytical results for the Stormwater Management system were received. The unit appears to be removing HE, but not barium.

***Interim Measure* (IM)** –

Activities at the TA-16-260 IM were continued. Site restoration was completed.

***Public and Stakeholder Involvement***– A presentation on the 260 CMS was made to the Santa Fe Geological Society. The presentation was well-received by an audience of approximately 20 geologists.

**Percentage of CMS Completed**

LANL estimates 82 % of the CMS has been completed to date. Note that this percentage does not reflect the deep and potential intermediate wells that will be drilled per the CMS plan addendum.

**Problems Encountered/Actions to Rectify Problems**

*General Problem (1)* The Cerro Grande fire has severely impacted the 260 RFI/CMS activities. These problems have been discussed in detail in previous monthly reports.

*Action to Rectify General Problem (1):* LANL will work closely with NMED through the HPT to mitigate the effects of the Cerro Grande fire. Effects of the fire on the monitoring data in Canon de Valle are being addressed.

***CMS Hydrogeologic Investigations***

*Problem (1):* Questions relating to the quality of data from well R-25 remains a concern to the TA-16-260 team.

*Action to Rectify Problem (1):* LANL will evaluate the data from the quarterly sampling of the R-25 well to evaluate its reliability.

***CMS Bench and Pilot Studies***

*Problem (1):* The fact that the Stormwater Management unit does not appear to be removing barium is of concern,

*Action to Rectify Problem (1):* LANL will work with ITRD to determine if there are problems with the barium-specific resin and will potentially evaluate other barrier materials.

***IM***

None.

**Key Personnel Issues**

None

**Projected Work for November 2001**

***RFI Report and CMS Plan***

- No work is scheduled for this month.

***BMPs***

- Inspection of existing BMPs following significant precipitation events will continue.

***CMS Hydrogeologic Investigations***

- Maintenance of autosamplers
- Checking for levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated autosamplers
- Continued precipitation monitoring and sampling for stable isotopes.
- Geophysical investigations in Canon de Valle
- Data analysis
- Continue site restoration at CdV-R-37-2
- Selection of samples from CdV-R-37-2 for further characterization

***Ecological Risk Pilot***

- Submittal of small-mammal samples for laboratory analysis
- Evaluation of data from ecotoxicity samples

***CMS Bench and Pilot Studies***

- Evaluation of data from Stormwater units

***IM***

- Data analysis and writing of IM Report

***Public and Stakeholder Involvement***

Presentations on the 260 CMS will be made at the Geological Society of America meeting in Boston and at the TIE meeting in Albuquerque.